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CORE LABORATORIES

0676-LNAPL-GEO1 KAFB10676

Shaw Environmental 111877-001

Project Number :140705

ASTM D-6733

Project Name: Kirtland AFB

Date Sampled: 6/15/11 2:30:00 PM

Component Name	Weight %	Liq. Volume %	Mole %	Molecular Wt.
Ethane	0.01	0.02	0.05	30.07
Propane	0.01	0.02	0.03	44.10
Isobutane	0.01	0.01	0.03	58.12
N-Butane	0.01	0.01	0.03	58.12
2,2-Dimethylpropane	0.03	0.04	0.06	72.15
Isopentane	0.02	0.03	0.04	72.15
N-Pentane	0.01	0.01	0.02	72.15
2,3-Dimethylbutane	0.03	0.04	0.05	86.18
2-Methylpentane	0.04	0.05	0.07	86.18
3-Methylpentane	0.03	0.04	0.05	86.18
N-Hexane	0.09	0.11	0.16	86.18
2,2-Dimethylpentane	0.01	0.01	0.01	100.20
Methylcyclopentane	0.09	0.10	0.16	84.16
2,4-Dimethylpentane	0.05	0.06	0.07	100.20
Benzene	0.04	0.04	0.08	78.11
3,3-Dimethylpentane	0.01	0.01	0.01	100.20
Cyclohexane	0.18	0.18	0.32	84.16
2-Methylhexane	0.14	0.16	0.21	100.20
2,3-Dimethylpentane	0.15	0.17	0.22	100.20
1,1-Dimethylcyclopentane	0.03	0.03	0.05	98.19
3-Methylhexane	0.19	0.22	0.28	100.20
Cis-1,3-dimethylcyclopentane	0.07	0.07	0.11	98.19
Trans-1,3-dimethylcyclopentane	0.07	0.07	0.11	98.19
3-Ethylpentane	0.01	0.01	0.01	100.20
Trans-1,2-dimethylcyclopentane	0.13	0.14	0.20	98.19
2,2,4-Trimethylpentane	0.29	0.33	0.38	114.23
N-Heptane	0.59	0.69	0.88	100.20
Methylcyclohexane	0.91	0.94	1.38	98.19
1,1,3-Trimethylcyclopentane	0.08	0.09	0.11	112.22
Ethylcyclopentane	0.05	0.05	0.08	98.19
2,5-Dimethylhexane	0.08	0.09	0.10	114.23
2,4-Dimethylhexane	0.10	0.11	0.13	114.23
Trans,cis-1,2,4-trimethylcyclopentane	0.09	0.10	0.12	112.22
3,3-Dimethylhexane	0.02	0.02	0.03	114.23
Trans,cis-1,2,3-trimethylcyclopentane	0.10	0.11	0.13	112.22
2,3,4-Trimethylpentane	0.13	0.14	0.17	114.23

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Component Name	Weight %	Liq. Volume %	Mole %	Molecular Wt.
Toluene	0.81	0.75	1.31	92.14
2,3,3-Trimethylpentane	0.12	0.13	0.16	114.23
2,3-Dimethylhexane	0.15	0.17	0.20	114.23
2-Methylheptane	0.46	0.53	0.60	114.23
4-Methylheptane	0.17	0.19	0.22	114.23
Cis,trans,1,2,4-trimethylcyclopentane	0.02	0.02	0.03	112.22
Cis-1,3 dimethylcyclohexane	0.40	0.42	0.53	112.22
3-Methylheptane	0.33	0.37	0.43	114.23
Trans-1,4-dimethylcyclohexane	0.20	0.21	0.27	112.22
1,1-Dimethylcyclohexane	0.06	0.06	0.08	112.22
Trans-1-ethyl-3-methylcyclopentane	0.13	0.14	0.17	112.22
Cis-1-ethyl-3-methylcyclopentane	0.04	0.04	0.05	112.22
Trans-1-ethyl-2-methylcyclopentane	0.07	0.07	0.09	112.22
1-Ethyl-1-methylcyclopentane	0.02	0.02	0.03	112.22
Trans-1,2,dimethylcyclohexane	0.23	0.24	0.31	112.22
Trans-1,3,dimethylcyclohexane	0.12	0.12	0.16	112.22
Cis-1,4-dimethylcyclohexane	0.12	0.12	0.15	112.22
N-Octane	1.11	1.26	1.44	114.23
Isopropylcyclopentane	0.03	0.03	0.04	112.22
2,2,5-Trimethylhexane	0.01	0.01	0.01	128.26
2,3,5-Trimethylhexane	0.02	0.02	0.02	128.26
Cis-1-ethyl-2-methylcyclopentane	0.05	0.05	0.07	112.22
Cis-1,2-dimethylcyclohexane	0.05	0.05	0.07	112.22
2,4-Dimethylheptane	0.11	0.12	0.13	128.26
4,4-Dimethylheptane	0.01	0.01	0.01	128.26
Ethylcyclohexane	0.60	0.61	0.80	112.22
2-Methyl-4-ethylhexane	0.05	0.06	0.06	128.26
2,6-Dimethylheptane	0.28	0.31	0.33	128.26
1,1,3-Trimethylcyclohexane	0.31	0.32	0.37	126.24
2,5-Dimethylheptane	0.16	0.18	0.19	128.26
3,5-Dimethylheptane	0.06	0.07	0.07	128.26
C9 Naphthene	0.04	0.04	0.05	126.24
C9 Naphthene	0.02	0.02	0.02	126.24
Ethylbenzene	0.33	0.30	0.46	106.17
Trans,trans,1,2,4-trimethylcyclohexane	0.05	0.05	0.06	126.24
Cis,trans,1,3,5-trimethylcyclohexane	0.21	0.21	0.25	126.24

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Component Name	Weight %	Liq. Volume %	Mole %	Molecular Wt.
3,3,4,Trimethylhexane	0.01	0.01	0.01	128.26
Meta-Xylene	0.75	0.69	1.05	106.17
Para-Xylene	0.22	0.20	0.31	106.17
2,3-Dimethylheptane	0.19	0.21	0.22	128.26
3,4-Dimethylheptane D/L	0.07	0.08	0.08	128.26
3,4-Dimethylheptane L/D	0.04	0.04	0.05	128.26
4-Ethylheptane	0.04	0.04	0.05	128.26
4-Methyloctane	0.24	0.27	0.28	128.26
2-Methyloctane	0.36	0.40	0.42	128.26
Cis,cis,1,2,3,trimethylcyclohexane	0.08	0.08	0.09	126.24
3-Ethylheptane	0.08	0.09	0.09	128.26
3-Methyloctane	0.43	0.48	0.50	128.26
Cis,trans,1,2,4,trimethylcyclohexane	0.03	0.03	0.04	126.24
Cis,cis,1,2,4,trimethylcyclohexane	0.03	0.03	0.04	126.24
Ortho-Xylene	0.42	0.38	0.59	106.17
Trans-1-Methyl-2-propylcyclopentane	0.03	0.03	0.04	126.24
Cis-1-ethyl-3-methylcyclohexane	0.52	0.52	0.61	126.24
Trans-1-ethyl-4-methylcyclohexane	0.17	0.17	0.20	126.24
Isobutylcyclopentane	0.05	0.05	0.06	126.24
2,2,6-Trimethylheptane	0.03	0.03	0.03	142.29
1-Ethyl-1-methylcyclohexane	0.02	0.02	0.02	126.24
Cis,trans,1,2,3,trimethylcyclohexane	0.04	0.04	0.05	126.24
Trans,trans,1,2,3,trimethylcyclohexane	0.04	0.04	0.05	126.24
N-Nonane	2.28	2.53	2.65	128.26
Trans-1-ethyl-3-methylcyclohexane	0.04	0.04	0.05	126.24
Trans-1-ethyl-2-methylcyclohexane	0.15	0.15	0.18	126.24
Cis-1-ethyl-4-methylcyclohexane	0.22	0.22	0.26	126.24
Isopropylbenzene	0.13	0.12	0.16	120.19
2,4-Dimethyloctane	0.15	0.17	0.16	142.29
2,6-Dimethyloctane	0.67	0.74	0.70	142.29
2,5-Dimethyloctane	0.06	0.07	0.06	142.29
N-propylcyclohexane	0.52	0.52	0.61	126.24
N-butylcyclopentane	0.14	0.14	0.17	126.24
3,5-Dimethyloctane	0.20	0.22	0.21	142.29
n-Propylbenzene	0.31	0.29	0.38	120.19
3,6-Dimethyloctane	0.24	0.26	0.25	142.29

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Component Name	Weight %	Liq. Volume %	Mole %	Molecular Wt.
3,3-Dimethyloctane	0.08	0.09	0.08	142.29
1-Methyl-3-ethylbenzene	0.47	0.43	0.58	120.19
1-Methyl-4-ethylbenzene	0.20	0.19	0.25	120.19
2,3-Dimethyloctane	0.26	0.28	0.27	142.29
1,3,5-Trimethylbenzene	0.30	0.28	0.37	120.19
4-Ethyloctane	0.10	0.11	0.10	142.29
C10 Naphthene	0.27	0.27	0.29	140.20
5-Methylnonane	0.12	0.13	0.13	142.29
4-Methylnonane	0.17	0.19	0.18	142.29
1-Methyl-2-ethylbenzene	0.64	0.58	0.79	120.19
2-Methylnonane	0.53	0.58	0.56	142.29
3-Ethyloctane	0.20	0.22	0.21	142.29
1,2,3,5 Tet-methylcyclohexane	0.07	0.07	0.07	140.20
3-Methylnonane	0.54	0.59	0.57	142.29
1,2,3,4 Tet-methylcyclohexane	0.08	0.08	0.09	140.20
C10 Naphthenes	0.18	0.18	0.19	140.20
1,2,4-Trimethylbenzene	0.90	0.82	1.12	120.19
Cis-1-methyl-3-propylcyclohexane	0.33	0.34	0.35	140.27
Cis 1,3 diethylcyclohexane	0.43	0.44	0.46	140.27
Trans-1-methyl-3-propylcyclohexane	0.14	0.14	0.15	140.27
1-Ethyl-2,3-dimethylcyclohexane	0.07	0.07	0.07	140.27
Isobutylbenzene	0.22	0.21	0.24	134.22
sec-Butylbenzene	0.39	0.36	0.43	134.22
N-Decane	3.44	3.76	3.61	142.28
Trans 1,3 diethylcyclohexane	0.04	0.04	0.04	140.27
1,2,3-Trimethylbenzene	0.46	0.41	0.57	120.19
1-Methyl-3-isopropylbenzene	0.26	0.24	0.29	134.22
1-Methyl-4-isopropylbenzene	0.16	0.15	0.18	134.22
Indan (2,3-Dihydroindene)	0.05	0.04	0.06	118.18
1-Methyl-2-isopropylbenzene	0.12	0.11	0.13	134.22
Butylcyclohexane	0.12	0.12	0.13	140.27
1,3-Diethylbenzene	0.28	0.26	0.31	134.22
1-Methyl-3-n-propylbenzene	0.16	0.15	0.18	134.22
1,4-Diethylbenzene	0.05	0.05	0.06	134.22
N-Butylbenzene	1.03	0.96	1.15	134.22
1,3-Dimethyl-5-ethylbenzene	0.57	0.52	0.63	134.22

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Component Name	Weight %	Liq. Volume %	Mole %	Molecular Wt.
1,2-Diethylbenzene	0.23	0.21	0.26	134.22
1-Methyl-2-n-propylbenzene	0.25	0.23	0.28	134.22
5-Methyldecane	0.32	0.34	0.31	156.31
4-Methyldecane	0.16	0.17	0.15	156.31
1,4-Dimethyl-2-ethylbenzene	0.63	0.57	0.70	134.22
1,2-Dimethyl-3-Ethylbenzene	0.40	0.36	0.44	134.22
C11 Naphthenes	0.73	0.73	0.65	168.30
C11 Paraffins	0.48	0.51	0.42	170.34
N-Undecane	4.42	4.77	4.22	156.31
1,2,4,5-Tetramethylbenzene	0.21	0.19	0.23	134.22
1,2,3,5-Tetramethylbenzene	0.12	0.11	0.13	134.22
C12 Unidentified	5.05	5.07	4.68	161.00
4-Methylindan	0.81	0.68	0.91	132.20
5-Methylindan	0.31	0.26	0.35	132.20
1,2,3,4-Tetramethylbenzene	0.84	0.74	0.93	134.22
Tetralin	0.13	0.11	0.15	132.20
5-Methylundecane	0.35	0.37	0.31	170.34
4-Methylundecane	0.34	0.36	0.30	170.34
2-Methylundecane	0.33	0.35	0.29	170.34
Pentylbenzene	0.61	0.57	0.61	148.25
Naphthalene	0.44	0.35	0.51	128.00
1,1 Dimethylindan	0.48	0.41	0.49	146.22
1,2 Dimethylindan	0.66	0.56	0.67	146.22
1,6 Dimethylindan	0.19	0.16	0.19	146.22
3-Methylundecane	0.37	0.40	0.32	170.34
C11 Aromatic	8.71	8.04	8.77	148.25
1-ethylindan	0.59	0.50	0.60	146.22
2-ethylindan	0.85	0.72	0.87	146.22
N-Dodecane	4.26	4.54	3.73	170.34
1,3,5-triethylbenzene	1.38	1.28	1.27	162.27
1,2,4-triethylbenzene	0.84	0.77	0.77	162.27
2-Methylnaphthalene	0.63	0.53	0.66	142.00
Tridecanes	8.42	8.34	7.18	175.00
N-Tridecane	3.27	3.45	2.65	184.37
1-Methylnaphthalene	0.27	0.21	0.28	142.00
Tetradecanes	3.20	3.13	2.51	190.00

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N-Tetradecane	0.83	0.87	0.62	198.39

Pentadecanes	4.33	4.18	3.14	206.00
N-Pentadecane	1.88	1.95	1.32	212.42
Hexadecanes	4.10	3.92	2.76	222.00
N-Hexadecane	0.75	0.78	0.49	226.44
Heptadecanes	1.03	0.98	0.65	237.00
N-Heptadecane	0.16	0.17	0.10	240.47
Pristane	0.03	0.03	0.02	268.52
Octadecanes	0.26	0.25	0.15	257.00
N-Octadecane	0.08	0.08	0.05	254.49
Phytane	0.01	0.01	0.01	282.55
N-Nonadecane	0.01	0.01	0.01	268.52
N-Eicosane	0.01	0.01	0.01	282.55
Unidentified	1.97	2.17	2.09	
Total	100.00	100.00	100.00	
Total Paraffins	16.21	17.68	16.74	
Total Isoparaffins	10.43	11.51	11.66	
Total Naphthenes	9.11	9.28	11.33	
Total Aromatics	28.85	26.09	31.75	
Unclassified	35.41	35.44	28.52	
Total C4	0.02	0.02	0.06	
Total C5	0.06	0.08	0.12	
Total C6	0.50	0.56	0.89	
Total C7	3.22	3.38	4.93	
Total C8	7.08	7.41	9.48	
Total C9	10.61	10.81	12.67	
Total C10	16.13	16.01	17.45	
Total C11	19.10	18.22	18.89	
Total C12	7.87	8.07	6.99	

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Component Type	Weight %	Liq. Volume %	Mole %	Molecular Wt.
C4 Paraffin	0.01	0.01	0.03	
C5 Paraffin	0.01	0.01	0.02	
C6 Paraffin	0.09	0.11	0.16	
C7 Paraffin	0.59	0.69	0.88	

C8 Paraffin	1.11	1.26	1.44
C9 Paraffin	2.28	2.53	2.65
C10 Paraffin	3.44	3.76	3.61
C11 Paraffin	4.42	4.77	4.22
C12 Paraffin	4.26	4.54	3.73
C4 Isoparaffin	0.01	0.01	0.03
C5 Isoparaffin	0.05	0.07	0.10
C6 Isoparaffin	0.10	0.13	0.17
C7 Isoparaffin	0.56	0.64	0.81
C8 Isoparaffin	1.85	2.08	2.42
C9 Isoparaffin	2.16	2.40	2.52
C10 Isoparaffin	3.35	3.68	3.51
C11 Isoparaffin	0.96	1.02	0.88
C12 Isoparaffin	1.39	1.48	1.22
C6 Naphthene	0.27	0.28	0.48
C7 Naphthene	1.26	1.30	1.93
C8 Naphthene	2.41	2.50	3.21
C9 Naphthene	2.71	2.72	3.22
C10 Naphthene	1.73	1.75	1.84
C11 Naphthene	0.73	0.73	0.65
C6 Aromatic	0.04	0.04	0.08
C7 Aromatic	0.81	0.75	1.31
C8 Aromatic	1.72	1.57	2.41
C9 Aromatic	3.46	3.16	4.28
C10 Aromatic	7.61	6.82	8.49
C11 Aromatic	12.99	11.70	13.14
C12 Aromatic	2.22	2.05	2.04

Mol WT of Sample, gm/mol	149.25
Density of Sample, gm/cc	0.8030

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